



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Brian K. Schmidt

Application No.: 09/765,886

Filed: January 18, 2001

For: METHOD AND APPARATUS FOR
AGGREGATE RESOURCE
MANAGEMENT OF ACTIVE COMPUTING
ENVIRONMENTS

Group Art Unit: 2155

Examiner: Benjamin R. Bruckart

Atty. Docket No.: SUNMP586

Date: July 24, 2006

CERTIFICATE OF MAILING

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Signed: _____

Sylvia Castillo

TRANSMITTAL OF APPEAL BRIEF
(PATENT APPLICATION – 37 CFR 41.67)

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Sir:

This Appeal Brief is in furtherance of the Notice of Panel Decision from Pre-Appeal Brief Review received by the United States Patent and Trademark Office on June 23, 2006.

This application is on behalf of:

☐ Small Entity ☒ Large Entity

Pursuant to 37 CFR 41.20(b)(2), the fee for filing the Appeal Brief is:

☐ \$250.00 (Small Entity) ☒ \$500.00 (Large Entity)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136 apply:

☐ Applicants petition for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

<u>Months</u>	<u>Large Entity</u>	<u>Small Entity</u>
<input type="checkbox"/> one	\$120.00	\$60.00
<input type="checkbox"/> two	\$450.00	\$225.00
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If an additional extension of time is required, please consider this a petition therefor.

☐ An extension for ()-months has already been secured and the fee paid therefor of \$.00 is deducted from the total fee due for the total months of extension now requested.

☒ Applicants believe that no extension of term is required. However, this conditional petition is being made to provide for the possibility that Applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Total Fees Due:

Appeal Brief Fee	\$500.00
Extension Fee (if any)	\$.00
Total Fee Due	<u>\$500.00</u>

☒ Enclosed is Check No. 16763 in the amount of \$500.00.

☒ The Commissioner is authorized to charge any additional fees or credit any overpayment to Deposit Account No. 50-0850 (Order No. SUNMP586). One copy of this transmittal is enclosed.

Respectfully submitted,
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Application for Patent

FOR:

**METHOD AND APPARATUS FOR AGGREGATE RESOURCE
MANAGEMENT OF ACTIVE COMPUTING ENVIRONMENTS**

**APPEAL BRIEF
EX PARTE Brian K. Schmidt**

**Application No. 09/765,886
Filed September January 18, 2001
Technology Center/Art Unit 2155**

Submitted in accordance with 37 C.F.R. §41.67

CERTIFICATE OF MAILING

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Signed: _____

Sylvia Castillo

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REAL PARTY IN INTEREST

The real party in interest is Sun Microsystems, Inc., of Santa Clara, California, the assignee of the present application.

II. RELATED APPEALS AND INTERFERENCES

The undersigned is not aware of any related appeals or interferences.

III. STATUS OF THE CLAIMS

Claims 1-6, 8-13, and 15-20 are pending in the present application, have been finally rejected, and are on appeal.

IV. STATUS OF THE AMENDMENTS

There have been no amendments presented since the final office action of February 27, 2006 was issued.

V. SUMMARY OF THE INVENTION

For this Summary, line numbers referenced in the application as originally filed include every printed line, including section headings. For the convenience of the reader, a paragraph number in square brackets (“[]”) corresponding to the application as published (U.S. Application Publication 2002/0095500) is provided after the page and line number referencing the application as filed. This Summary provides rewritten independent claims with references to the specification to satisfy the requirements of 37 C.F.R. § 41.67(c)(1)(v).

CLAIM 1:

Claim 1 sets forth a method for managing resources for an active computing environment. The method includes encapsulating the active computing environment into a compute capsule. Compute capsules and the system environment are described in the second full paragraph of page 10 [¶33] of the specification, which explains that the compute capsule comprises a plurality of processes and their associated system

environment. Claim 1 further sets forth that the encapsulating comprises partitioning an operating system so that host-dependent and personalized elements of the active computing environment are moved into the compute capsule while shared resources and a state necessary to manage them are excluded from the compute capsule. These features are shown and described in the Amendment to the Specification submitted August 15, 2005, including Figure 13. Specifically, see the last full paragraph on page 2 of the Amendment. Succeeding paragraphs further explain the partitioning. Note that this Amendment brings into the specification subject matter that was previously incorporated by reference. Finally, claim 1 calls for assigning system resources to the compute capsule, thereby collectively assigning the system resources to the plurality of processes. This is described with reference to Figure 1, and specifically, operation 140 of Figure 1, beginning at page 11, line 6 of the specification through to page 12, line 6 [¶¶ 36-37].

CLAIM 8:

8. Claim 8 is directed to a system for managing computer resources. The system is shown by way of example in Figure 8. The system includes a compute capsule. A compute capsule is shown by way of example in Figure 13, and associated text inserted by the Amendment submitted August 15, 2005. The compute capsule comprises a plurality of processes and their associated system environment, as shown and described with reference to Figure 13 inserted as part of the Amendment submitted August 15, 2005, and in the text, e.g., the several paragraphs starting at line 13 on page 2 of the August 15, 2005 Amendment. The compute capsule further comprises host-dependant and personalized elements of an operating system, wherein shared resources and a state necessary to manage them are excluded from the compute capsule. Reference is again made to the Amendment submitted August 15, 2005, specifically, page 2, lines 13-15 and page 5, lines 20-22. The system further includes a resource manager configured to assign system resources to said compute capsule (represented as an operation in Figure 1, element 140, and described in the Abstract.

CLAIM 15:

Claim 15 is directed to a computer program product comprising a computer usable medium having computer readable program code embodied therein configured to manage resources with respect to an active computing environment. A computer usable medium is

shown by way of example in Figure 8, element 812 and described on page 16 lines 18-21 [¶ 53]. The program product includes computer readable code configured to cause a computer to encapsulate said active computing environment into a compute capsule. The active computing environment comprising a plurality of processes and their associated system environment. See the second full paragraph of page 10 [¶33] of the specification. The encapsulating comprises partitioning an operating system so that host-dependant and personalized elements of the active computing environment are moved into the compute capsule while shared resources and a state necessary to manage them are excluded from the compute capsule. These features are shown and described in the Amendment to the Specification submitted August 15, 2005, including Figure 13. Specifically, see the last full paragraph on page 2 of the Amendment. Succeeding paragraphs further explain the partitioning. The program product further includes computer readable code configured to cause the computer to assign system resources to the compute capsule, thereby collectively assigning the system resources to the plurality of processes. This is described with reference to Figure 1, and specifically, operation 140 of Figure 1, beginning at page 11, line 6 of the specification through to page 12, line 6 [¶¶ 36-37].

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-3, 6, 8-10, 13, 15-17, and 20 stand rejected under 35 U.S.C. § 102(e) for being anticipated by U.S. Patent 6,247,109, issued to Kleinsorge et al. (hereinafter, "Kleinsorge"). Claims 4, 5, 11, 12, 18, and 19 stand rejected under 35 U.S.C. § 103(a) for being unpatentable over Kleinsorge in view of U.S. Patent 6,061, 795 issued to Dircks, et al. (hereinafter, "Dircks").

VII. ARGUMENT

For this Argument, any references to "the Office Action" will be in reference to the most recent Office Action dated February 27, 2006. References to specific line numbers in the Office Action or other documents will count every printed line only, including section headings, but not including page headers.

A. Independent claims 1, 8, and 15

Claims 1-3, 6, 8-10, 13, 15-17, and 20 stand rejected under 35 U.S.C. § 102(e) for being anticipated by U.S. Patent 6,247,109 issued to Kleinsorge et al. (hereinafter, “Kleinsorge”). Appellant respectfully traverses because (1) Kleinsorge does not show partitioning an operating system, and (2) Kleinsorge does not show a compute capsule including host dependent and personalized elements of the active computing environment and excluding shared resources and a state necessary to manage them.

I. *Kleinsorge does not show “partitioning an operating system” as set forth in Claim 1 (line 5) and claim 15 (line 8).*

The claims for this Application are directed to a mechanism for assigning system resources to the processes in a compute capsule. Resources are identified by way of example in the specification as including memory use, processor attention, or the use of a device (sentence bridging pages 11 and 12). Claim 1 defines a compute capsule as “comprising a plurality of processes and their associated system environment.” As explained in the specification, compute capsules permit the user to manage running applications in ways that current technology does not permit. For example, a user can move running applications into a compute capsule which can then be transferred to a different computer, or “paused” with the state of the running application and its environment being saved to disk or transmitted to a different location and restarted (see, e.g., page 10, lines 8-15 [¶ 33] and lines 13-18 of page 2 of the August 15, 2005 Amendment).

In the present Application, claim 1 specifically sets forth, *inter alia*,

“ . . . the encapsulating comprising partitioning an operating system so that host-dependent and personalized elements of the active computing environment are moved into the compute capsule while shared resources and state necessary to manage them are excluded from the compute capsule . . . ”

(claim 1, lines 4-8). The Examiner suggests that this element is described in Kleinsorge at col. 5, lines 4-15; col. 1, lines 24-31, and col. 4, lines 63-66 (Office Action, page 2 lines 17-20). “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir.

1987). Furthermore, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Kleinsorge is directed to a resource management scheme that allows *hardware resources* to be dynamically partitioned so that each hardware partition executes an *instance* of an operating system (col. 4, lines 47-50; Figure 2). Each instance is a full implementation of an operating system and is not described as being partitioned in any way. Since Kleinsorge does not partition an operating system as set forth in each of the independent claims, Kleinsorge does not anticipate the present Application.

In response to this point, the Examiner responds on page 5 of the Office Action, stating in part:

“The limitation of ‘the encapsulating comprising partitioning an operating system’ is taught in col. 4, lines 43-54. We see a system subdivided into partitions each with the ability to run its own so [*sic*] copy or instance of an operating system. A partition is defined as ‘A) the act or process of dividing something into parts or B) The state of being so divided . . .’”

(Office Action, page 5, lines 13-15). Respectfully speaking, Appellant does not follow the Examiner’s logic. Begin with the definition of partition: Appellant agrees with the Examiner’s definition for that term. The claim states, “the encapsulating comprising partitioning an operating system.” Substituting the Examiner’s definition, the claim could be read as, “the encapsulating comprising *dividing into parts* an operating system.” However, the Examiner admits that in Kleinsorge, “each [partition has] the ability to run its own . . . copy or instance of an operating system” (see quoted text above). Since each hardware partition of Kleinsorge contains a complete copy or instance of the operating system, the operating system is not divided into parts as suggested in the Office Action.

It should be particularly noted that claim 1 states, “partitioning *an* operating system . . .” (emphasis added). Thus, the claims require that *an* operating system be partitioned, or *divided into parts*. At best, Kleinsorge separates multiple operating systems by placing each in its own hardware section.

2. ***Kleinsorge fails to show a compute capsule, or analogue thereof, including host dependent and personalized elements of the active***

computing environment, and excluding shared resources and the state necessary to manage them, as set forth in claim 1 (lines 5-7), claim 8 (lines 3-5), and claim 15 (lines 8-10).

Claims 1, 8, and 15 each require that certain aspects of the operating system are included in the compute capsule and other aspects of the operating system are excluded. Kleinsorge places an entire copy of an operating system in each partition. Since Kleinsorge does not show “[t]he identical invention . . . in as complete detail as is contained in the ... claim” (Id.), Appellant respectfully submits that the claims are not anticipated by Kleinsorge. The Examiner suggests that these features are shown by Kleinsorge at col. 5, lines 4-27 and col. 23, lines 54-65 (Office Action, page 5, lines 17-23). Specifically, the Examiner states that “[t]he partitions are host-dependent and personalized elements . . . because they are movable” (Office Action, page 5, lines 17-18). In addition, the Examiner states that, “[s]hared resources . . . and state necessary to manage them . . . are excluded from the compute capsule are taught as the shared resources that are managed by the APMP database” (Office Action, page 5, lines 21-23). With respect to these arguments, Appellant respectfully submits that it is *not possible* for the partition taught by Kleinsorge to access shared resources *while at the same time excluding the state necessary to manage the shared resources from the partition*. Even assuming that the Examiner is correct in stating that the APMP database is excluded from Kleinsorge's hardware partitions (being stored in shared memory), this does not meet the definition of “excluding shared resources and the state necessary to manage them.” This is because each running operating system accessing the shared memory or other resources *must* maintain the state of the shared memory within the hardware partition *within which it wholly resides*. Appellant therefore respectfully submits that Kleinsorge does not exclude the state necessary to manage shared resources, and therefore that the partitions of Kleinsorge do not read on the claimed compute capsule as asserted in the Office Action.

For the reasons mentioned above, Appellant respectfully submits that claims 1, 8, and 15 should be allowed. Furthermore, each of claims 2-6, 9-13, and 16-20 depends from

claim 1, 8, or 15, and should therefore be allowed for at least the same reasons as those claims.

B. Dependent claims 2, 9, and 16

Claims 2, 9, and 16 further provide that a guaranteed share of system resources are assigned to the compute capsule. As explained in the specification, users may demand a guaranteed level of resources for performance isolation from other individuals using the system (Application, page 11, lines 14-15 [¶ 36]).

The Office Action indicates that the capacity of Kleinsorge to organize hardware partitions into a “community” reads on assigning a guaranteed share of resources to a compute capsule (Office Action, page 3, lines 5-6). Appellant respectfully disagrees. The community described by Kleinsorge is simply a mechanism to allow two hardware partitions to share resources such as memory (see, e.g., col. 16, lines 4-8). There is no showing by Kleinsorge of a compute capsule (or any analogue thereof) being assigned a *guaranteed* share of resources.

Since Kleinsorge does not mention a guaranteed share of resources, performance isolation, or any analogue thereof, and because Kleinsorge does not mention assigning resources to a compute capsule, Appellant respectfully submits that claims 2, 9, and 16 are allowable for the reasons mentioned above.

For the reasons stated above, Appellant respectfully submits that the present application should have been allowed. Therefore, the rejections of claims 1-6, 8-13, and 15-20 under 35 U.S.C. §§ 102(e) and 103(a) are improper and should be reversed.

Respectfully submitted,
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VIII. VIII - CLAIMS APPENDIX

CLAIMS ON APPEAL:

1. A method for managing resources for an active computing environment comprising:

encapsulating said active computing environment into a compute capsule, the compute capsule comprising a plurality of processes and their associated system environment, the encapsulating comprising partitioning an operating system so that host-dependant and personalized elements of the active computing environment are moved into the compute capsule while shared resources and a state necessary to manage them are excluded from the compute capsule;

assigning system resources to said compute capsule, thereby collectively assigning said system resources to said plurality of processes.

2. The method of claim 1 wherein said system resources comprise a guaranteed share of resources.

3. The method of claim 1 wherein said assigning comprises applying a resource management algorithm.

4. The method of claim 1 wherein said assigning comprises restricting said compute capsule from accessing a network.

5. The method of claim 1 wherein said assigning comprises restricting said compute capsule from accessing a local file system.

6. The method of claim 1 wherein said assigning comprises allowing user-level control over allocation of the system resources among the plurality of processes in the compute capsule.

8. A system for managing computer resources, the system comprising:

a compute capsule, the compute capsule comprising a plurality of processes and their associated system environment, the compute capsule further comprising host-dependant and personalized elements of an operating system, wherein shared resources and a state necessary to manage them are excluded from the compute capsule;

a resource manager configured to assign system resources to said compute capsule.

9. The system of claim 8 wherein said resource manager assigns a guaranteed share of resources to said compute capsule.

10. The system of claim 8 wherein said resource manager applies a resource management algorithm to said compute capsule.

11. The system of claim 8 wherein said resource manager restricts network access by said compute capsule.

12. The system of claim 8 wherein said resource manager restricts access to a local file system by said compute capsule.

13. The system of claim 8, said system allowing user-level control over allocation of the system resources among the plurality of processes in the compute capsule.

15. A computer program product comprising:

a computer usable medium having computer readable program code embodied therein configured to manage resources with respect to an active computing environment, said computer program product comprising:

computer readable code configured to cause a computer to encapsulate said active computing environment into a compute capsule, the active computing environment comprising a plurality of processes and their associated system environment, the encapsulating comprising partitioning an operating system so that host-dependant and personalized elements of the active computing environment are moved into the compute capsule while shared resources and a state necessary to manage them are excluded from the compute capsule; and

computer readable code configured to cause the computer to assign system resources to said compute capsule, thereby collectively assigning said system resources to said plurality of processes.

16. The computer program product of claim 15 wherein said system resources comprise a guaranteed share of resources.

17. The computer program product of claim 15 wherein said computer readable code configured to cause the computer to assign system resources comprises computer readable code configured to cause the computer to apply a resource management algorithm.

18. The computer program product of claim 15 wherein said computer readable code configured to cause the computer to assign system resources comprises computer readable code configured to cause the computer to restrict network access by said compute capsule.

19. The computer program product of claim 15 wherein said computer readable code configured to cause the computer to assign system resources comprises computer readable code configured to restrict access to a local file system by said compute capsule.

20. The computer program product of claim 15 wherein said computer readable code configured to cause the computer to assign system resources comprises computer readable code configured to allow user-level control over allocation of the system resources among the plurality of processes in the compute capsule.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.